Amendments In The Claims

Claim 1 (**canceled**, allowed in the parent case, and shown here as a convenience to the Examiner);

1. A method of measuring a data signal to create an eye diagram of that signal, the method comprising the steps of:

(a) setting a hits count to zero;

(b) comparing the instantaneous voltage of a clock signal associated with the data signal to a clock threshold voltage to produce a logical clock signal;

(c) delaying the logical clock signal by a selected first amount to produce a delayed logical clock signal;

(d) comparing the instantaneous voltage of the data signal to be measured to a data threshold voltage to produce a logical data signal;

(e) delaying the logical data signal by a selected second amount to produce a delayed logical data signal;

(f) delaying the delayed logical clock signal by a selected third amount to produce a doubly delayed logical clock signal;

(g) capturing the value of the delayed logical data signal in response to the delayed logical clock signal;

(h) capturing the value of the delayed logical data signal in response to the doubly delayed logical clock signal;

(i) incrementing the hits count each time a value captured in step (g) is different to that captured in step (h);

(j) repeating steps (b) through (i) until a selected condition is satisfied;

(k) subsequent to step (j), storing the count of step (i) in a data structure indexed by the difference between the first and second amounts and by the data threshold voltage;

(l) repeating steps (a) through (k) with different combinations of the data threshold voltage and difference between the first and second amounts; and

(m) generating an eye diagram from the hits counts stored in the data structure.

Claim 2 (**currently amended**);

2. An eye diagram analyzer comprising:

a ~~variable~~ clock signal waveform delay circuit having an input for receiving a clock signal and an output producing a delayed clock signal that is delayed by a selected first amount and whose transitions in a selected direction serve as a time reference;

a threshold detector having a variable threshold, an input for receiving a data signal to be measured as an eye diagram and having an output producing a logical data signal;

a variable data signal waveform delay circuit having an input coupled to receive the logical data signal and an output producing a delayed logical data signal whose amount of delay is a swept second amount that can range from less than to more than first amount of delay;

a transition detection circuit coupled to the delayed clock signal and to the delayed logical data signal, and having an output producing a transition signal indicative of a transition in the delayed logical data signal occurring during a selected length of time subsequent to a transition in the selected direction within the delayed clock signal;

a counter coupled to the transition signal and that counts occurrences thereof; and

a memory whose content is organized as ~~a~~an eye diagram data structure indexed by the signed difference in the first and second amounts of delay ~~delays for the variable clock signal waveform delay circuit and the variable data signal waveform delay circuit~~, by the variable threshold, and that stores in an indexed location the number of counted occurrences that the data signal occupied the indexed location with an eye diagram.

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